*Original Article*

# Awareness of Physical Therapy Rehabilitation Protocols Following Total Knee Replacement Among Physical Therapists in Karachi

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## ABSTRACT

**Background:** Total knee replacement (TKR) is a common surgical intervention for patients with end-stage osteoarthritis to alleviate pain and restore knee function. As the demand for TKR rises globally, effective postoperative rehabilitation is crucial to improve strength, mobility, and quality of life. Physical therapy plays a central role in recovery, yet physical therapists' awareness of rehabilitation protocols may vary. This study aims to assess the knowledge and awareness of physical therapists in Karachi regarding rehabilitation protocols following TKR.

**Methods:** A cross-sectional study was conducted using a convenience sampling technique, which involved 102 physical therapists working in hospitals and clinical settings in Karachi. Participants completed a self-designed questionnaire on their awareness of TKR rehabilitation protocols, including specific exercises and interventions. Descriptive statistics, such as frequency and percentage distributions, were used to analyze the data.

**Results:** The study found that 100% of participants acknowledged the importance of physical therapy for TKR patients and its role in reducing hospital stays and facilitating a quicker return to daily activities. However, knowledge gaps regarding specific rehabilitation exercises were identified. For example, 75.5% of therapists recognized full knee flexion as important, and only 1% identified ankle pumping as a critical exercise. Additionally, 84.3% of participants highlighted muscle weakness, limited range of motion, and slow walking as significant challenges in postoperative rehabilitation.

**Conclusion:** While physical therapists in Karachi demonstrate awareness of the importance of rehabilitation post-TKR, further education is needed to address gaps in knowledge and improve rehabilitation outcomes. Enhanced public awareness of physiotherapy's role in recovery is also essential.

**Keywords:** Awareness, Physical Therapy, Rehabilitation Protocol, Total Knee Arthroplasty.

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## INTRODUCTION

Total knee replacement (TKR) is a highly effective intervention for managing pain and impairment in end-stage osteoarthritis of the knee. As osteoarthritis prevalence rises, TKR procedures have become increasingly common, particularly among Medicare-covered inpatient surgeries. Post-TKR rehabilitation is essential to improve strength, function, reduce pain, and help patients return to daily activities[1]. There are four primary types of knee implants used in TKR: metal on plastic, ceramic on plastic, ceramic on ceramic, and metal on metal[2]. Continuous passive motion machines are commonly used in rehabilitation, showing positive results in recovery[3].

An international survey of 18 countries, including Canada, the U.S., and European nations, found that TKA procedures are on the rise globally, with annual growth ranging from 5.3% to 17%, highlighting the increasing demand for TKR[4]. Post-operative rehabilitation involves a tailored plan designed by orthopedic surgeons and physical therapists to help patients regain mobility and strength. Physical therapists recommend exercises such as quadriceps sets, straight leg raises, and knee bends within 48 hours of surgery, although some pain and discomfort are normal during early recovery[5,6].

Exercise not only strengthens muscles but also helps maintain a healthy weight, reducing the risk of complications[7]. Post-operative knee function improves over 6-12 months, with most patients returning to walking within 4-8 weeks[8]. Long-term outcomes are favorable, with 90% of knees functioning well after 15 years[9]. Rehabilitation protocols also play a critical role in preventing deep vein thrombosis and improving circulation[10]. While the procedure carries a low risk of major complications, awareness of rehabilitation protocols is vital for enhancing patient care[2,13].

This study aims to assess physical therapists' awareness of rehabilitation protocols following TKR in Karachi, identifying potential gaps in knowledge to improve patient outcomes and guide training investments.

## METHODOLOGY

### Study Design and Setting

A cross-sectional study was conducted on the 102 physical therapists working in different hospitals and clinical setups in Karachi via a convenience sampling technique, specializing in helping people recover from musculoskeletal issues after surgery. However, those focused on treating neurological, cardiac, or aesthetic conditions were excluded.

### Ethical Considerations

Before the data collection, all participants had to give written consent to participate in the study. Consent was sought in both English and Urdu as required by the participant.

### Data Collection Method

Afterwards, the data was collected through a self-designed questionnaire on physiotherapy awareness, protocols after TKR and the perception of physiotherapy services. The questionnaire was employed with closed-ended questions structured to be completed within a concise timeframe of no more than 5 minutes.

### Data Analysis

The SPSS version 20 was used for the data entry and analysis. Descriptive statistics such as frequency and percentages were employed to report the study population's characteristics and responses.

## RESULTS

All the physiotherapists in the group knew a lot about total knee replacement and its recovery process. The results revealed that every physiotherapist, 100% of them, believed that physical therapy is vital for TKR. Also, they all agreed that rehabilitation significantly helps reduce the time spent in the hospital after TKR surgery. Additionally, the entirety of the sample concurs that postoperative rehabilitation facilitates a quicker return to activities of daily living (ADLs) for patients.

Regarding perspectives on orthopedic surgeons, 49% of physiotherapists perceived that these surgeons occasionally neglect recommending physiotherapy for TKR patients, with a frequency rating of 5. Conversely, 51% of physiotherapists disagreed with this perspective, assigning a frequency rating of 5. Despite this slight variation in opinions, there is an overall consensus among physiotherapists that rehabilitation after TKR significantly contributes to increasing joint mobility (Fig.1).

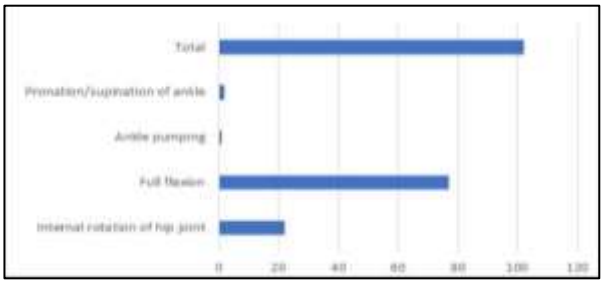


*Fig-1. Movement performed after TKR*

The frequency distribution table presents the participants' responses regarding specific physiotherapy exercises, with a total sample size of 102 individuals. Among the exercises assessed, 21.6% of the participants identified internal rotation of the hip joint as a relevant exercise in their practice. A significantly higher percentage, constituting 75.5% of the sample, acknowledged full flexion as a crucial exercise. Ankle pumping, on the other hand, was recognized by only 1% of the participants, indicating a relatively lower emphasis on this particular exercise within their physiotherapeutic approach. Lastly, the exercise involving

pronation/supination garnered recognition from 2% of participants. In summary, the compiled responses highlight variations in the perceived importance of specific exercises, with full flexion being the most widely acknowledged exercise among the physiotherapists in the study (Fig.2).

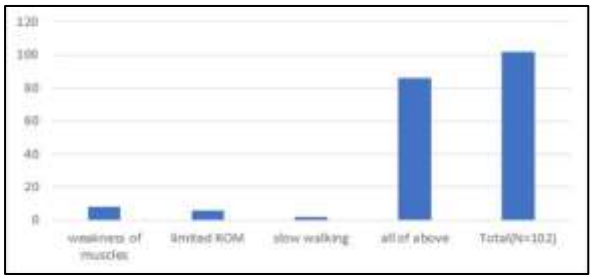


*Fig-2. Factors Contributing to Challenges in Post-Operative Rehabilitation*

The presented frequency distribution table outlines the participants' responses regarding factors contributing to challenges in postoperative rehabilitation. The data, based on a total sample size of 102 individuals, indicates that 7.8% of participants identified weakness of muscles as a notable factor affecting rehabilitation. Limited range of motion (ROM) was acknowledged by 5.9% of the participants as a contributing factor. A smaller percentage, representing 2% of the sample, recognized slow walking as a potential challenge in rehabilitation post-surgery. Notably, most participants, constituting 84.3%, selected "all of the above," indicating a consensus that weakness of muscles, limited ROM, and slow walking collectively contribute to challenges in postoperative rehabilitation (Fig.3).

In summary, the responses reveal varied perspectives on factors influencing rehabilitation, with a substantial portion acknowledging a combination of these challenges as integral in the postoperative rehabilitation process.

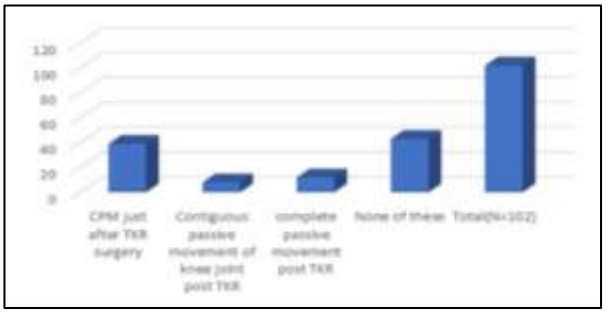


*Fig-3. Role of CPM after TKR*

The participants' comments about the physiotherapy interventions used with TKR surgery are summarized in the frequency distribution table display. The results show that 38.2% of participants acknowledged using Continuous Passive Movement (CPM) shortly after TKR surgery, based on a total sample size of 102 people. Furthermore, 7.8% of subjects mentioned applying continuous passive knee joint movement after TK. Another 11.8% of the sample reported the utilization of complete passive movement post-TK. Interestingly, 42.2% of participants indicated "None of these," suggesting a diversity of approaches or potentially a lack of consensus on the specific types of passive movements employed post-TKR surgery. In summary, the responses underscore the varied practices in applying physiotherapeutic interventions, with a notable proportion opting for CPM just after TKR surgery. In contrast, others reported different or no specific passive movements post-TKR.

## DISCUSSION

This study aimed to determine how well-informed 102 Karachi physiotherapists were about the physical therapy regimen following total knee replacement (TKR) surgery. The results showed significant awareness gaps between male and female physiotherapists: only 46.1% of male physiotherapists knew about TKR surgery and its protocol, compared to 100% of female physiotherapists[1].

Since most physiotherapy treatments in Pakistan are offered as referrals, physiotherapists were found to be the primary source of physiotherapy competency. Interestingly, the 'government' was not considered a source of information and did not come up in the group discussions, indicating a lack of awareness among the public about physical therapy[2]. The study found that fewer people learn about physiotherapy through media and educational institutions, emphasizing the need for better efforts to spread the word about the profession.

The survey also revealed that many participants agreed on the importance of more education about physiotherapy rehabilitation. This suggests an opportunity to increase public awareness of physical therapy. The fact that many participants

did not get information from the media and that secondary sources lacked crucial physiotherapy details might be why they are not well-informed about physiotherapy[3].The research suggested that the Pakistani government and media should do more to spread awareness about physical therapy to address these findings. Most participants agreed that physical therapists are skilled at diagnosing and treating patients, recognizing physiotherapy's important role in improving health. Additionally, participants expressed satisfaction with their physiotherapy treatments, indicating that local physical therapy facilities offered satisfactory healthcare services.

Most people had positive attitudes toward physical therapy, as shown by their recommendations of the profession to family members or their consideration of becoming a physiotherapist[4]. Moreover, many participants had direct experiences with physiotherapists as patients or family members receiving treatment. Many believed that hospitals were the central workplaces for physical therapists[5]. This could be why some participants perceived physiotherapy services as more affordable, possibly due to a lack of awareness regarding using Independent Healthcare Services (IHS) for physical therapy.

## Limitations

This study on how much physical therapists know about protocols after total knee replacement has some limitations. The 102 people in the study were all from Karachi, so they might not represent a more extensive group perfectly. Using self-reported information and closed-ended questions can introduce bias. The study's narrow focus and lack of government data could limit its conclusion. Notwithstanding these limitations, the results provide a foundation for comprehending awareness levels and indicate directions for further investigation and enhancement of physiotherapy instruction tactics.

## Future Recommendation

To improve generalizability, it is advised that comparable research be carried out on a bigger, more varied scale in the future. Longitudinal studies may shed light on how awareness evolves. Employing a mix of qualitative and quantitative methods may yield a deeper understanding of the factors influencing awareness. Additionally, targeted educational initiatives should be explored for physical therapists and the public to improve overall awareness and knowledge regarding post-total knee replacement rehabilitation protocol. Collaboration with government bodies could be crucial in incorporating physiotherapy awareness into public health initiatives.

## CONCLUSION

The study has demonstrated significant awareness and knowledge among physical therapists in Karachi regarding the rehabilitation protocol for total knee arthroplasty. Physical therapists emerged as the primary source of information, contributing significantly to the enhanced awareness and knowledge of physiotherapy. However, despite the commendable awareness levels among the therapists, there remains a crucial need to further enlighten the public about the importance of physical therapy services. While the expertise of physical therapists is well-acknowledged within their professional community, extending this awareness to the broader public can amplify the understanding and appreciation of physiotherapy's vital role in promoting health and recovery.

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None.

**Author Contributions**
**Muhammad Mehran Haider** contributed to the conceptualization, methodology, data analysis, and drafted and revised the manuscript. **Maheen Nasir** was responsible for data collection, literature review, statistical analysis, and contributed to writing the manuscript. **Huma Bukhari** provided guidance on result interpretation and was involved in manuscript editing and the final review. **Laheem Hassan** contributed to the study design, research coordination, and assisted with manuscript preparation and revisions.

**Ethical Approval**
This study received approval from the Institute of Physical Medicine and Rehabilitation, Dow University of Health Sciences, Karachi, Pakistan.

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None.

**Conflict of Interests**
None.

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